Please!
Turn OFF cell phones
and paging devices

The Geographic Approach

An Introduction to Geocoding

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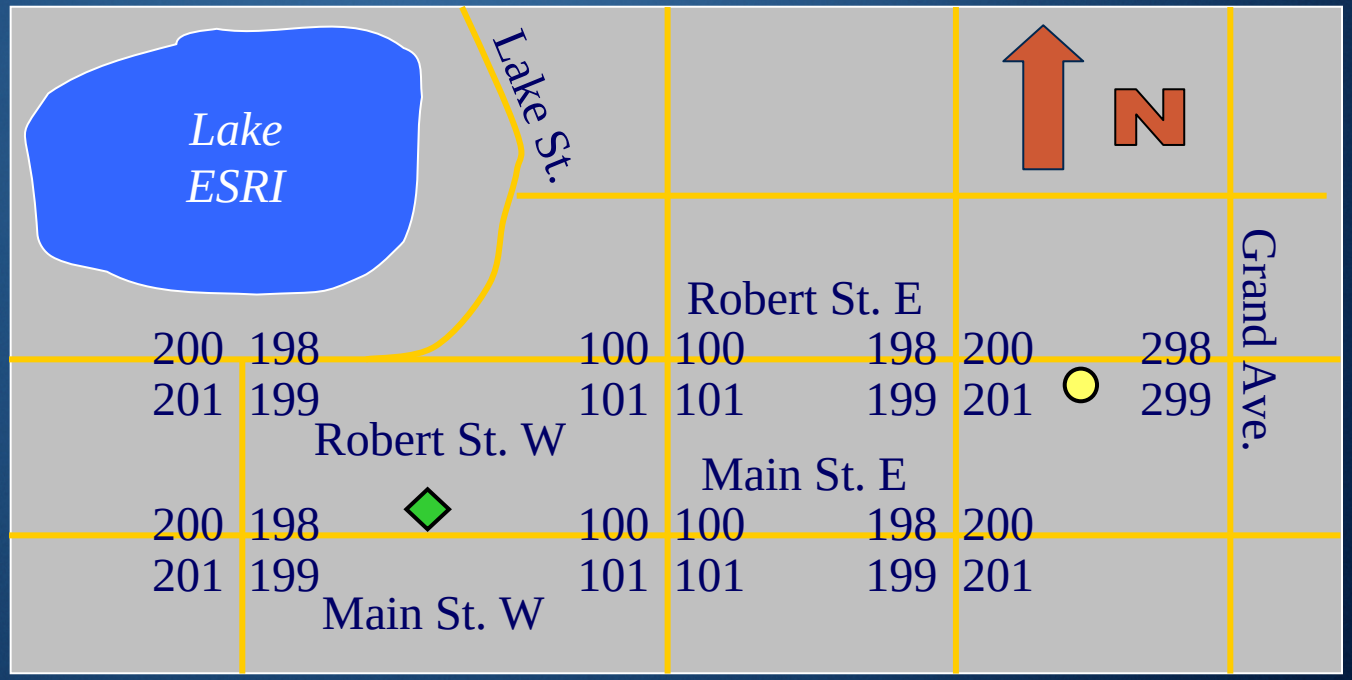
Agenda

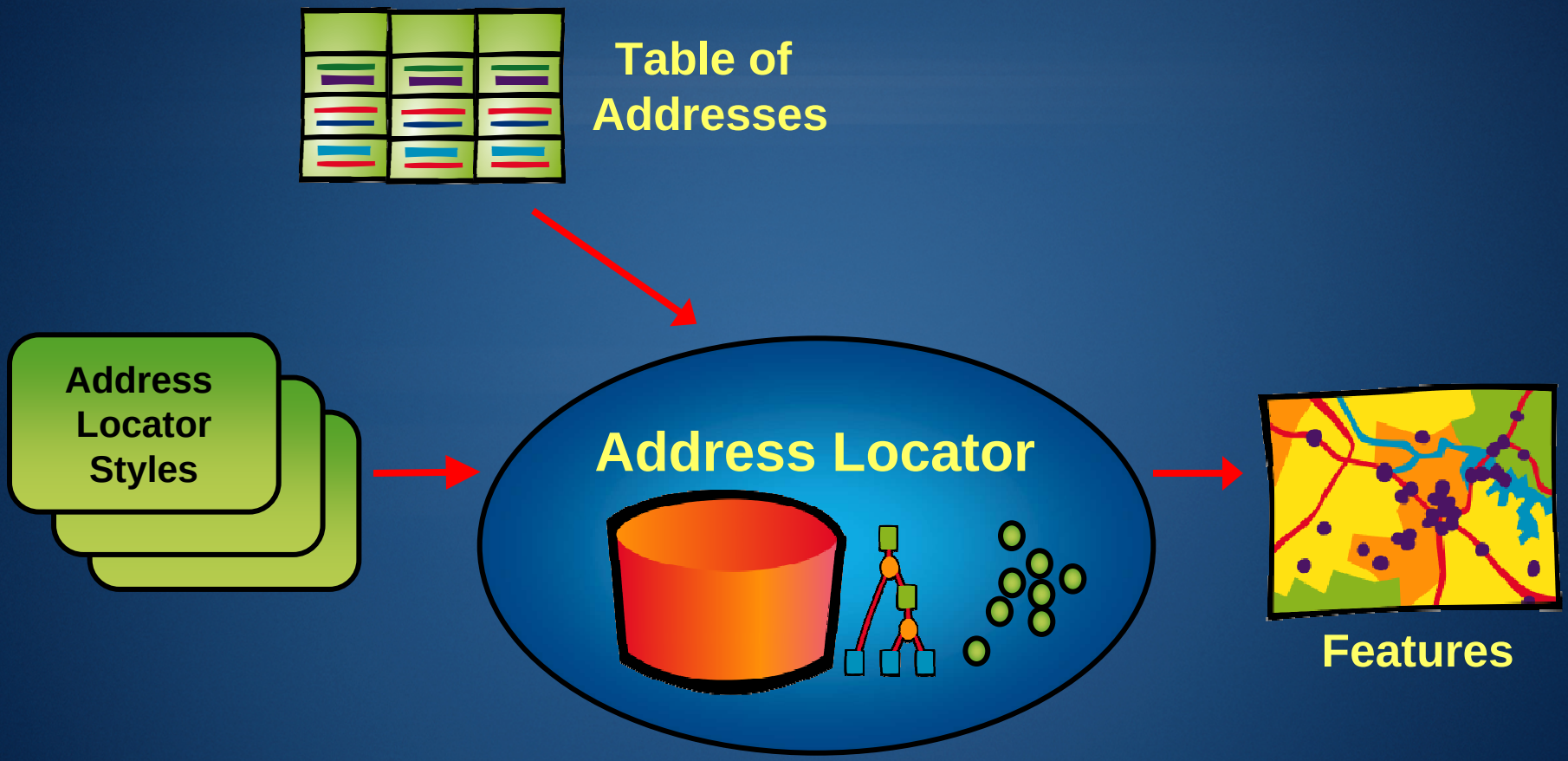
- What is geocoding?
- ArcGIS geocoding components
- Geocoding work flow
  - Reference data
  - Address locators
- Address Standardization
- Geocoding services in ArcGIS Server

What is Geocoding?

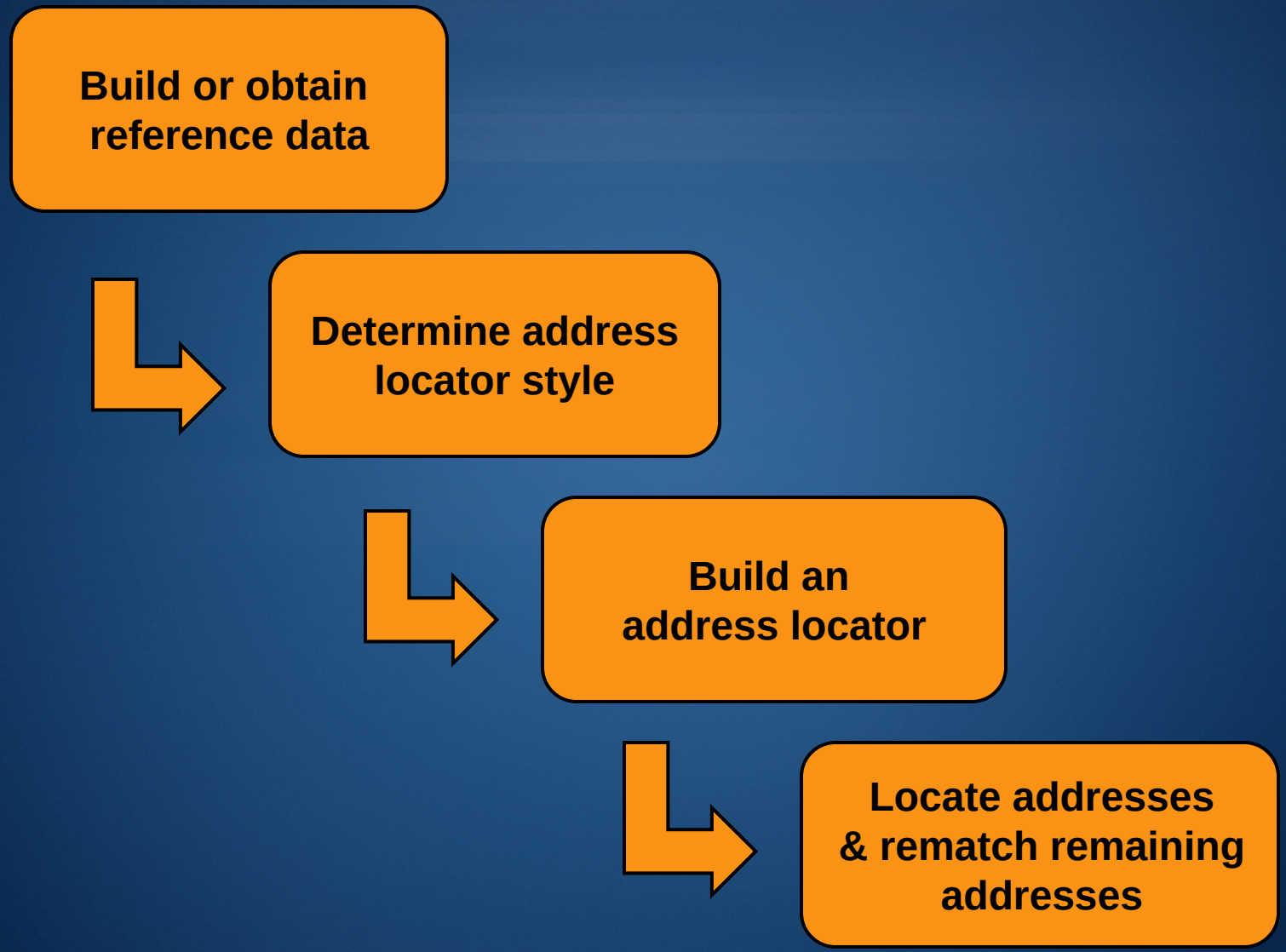
- The process of assigning a location, usually in the form of coordinate values (points), to an address by comparing descriptive locations (addresses)



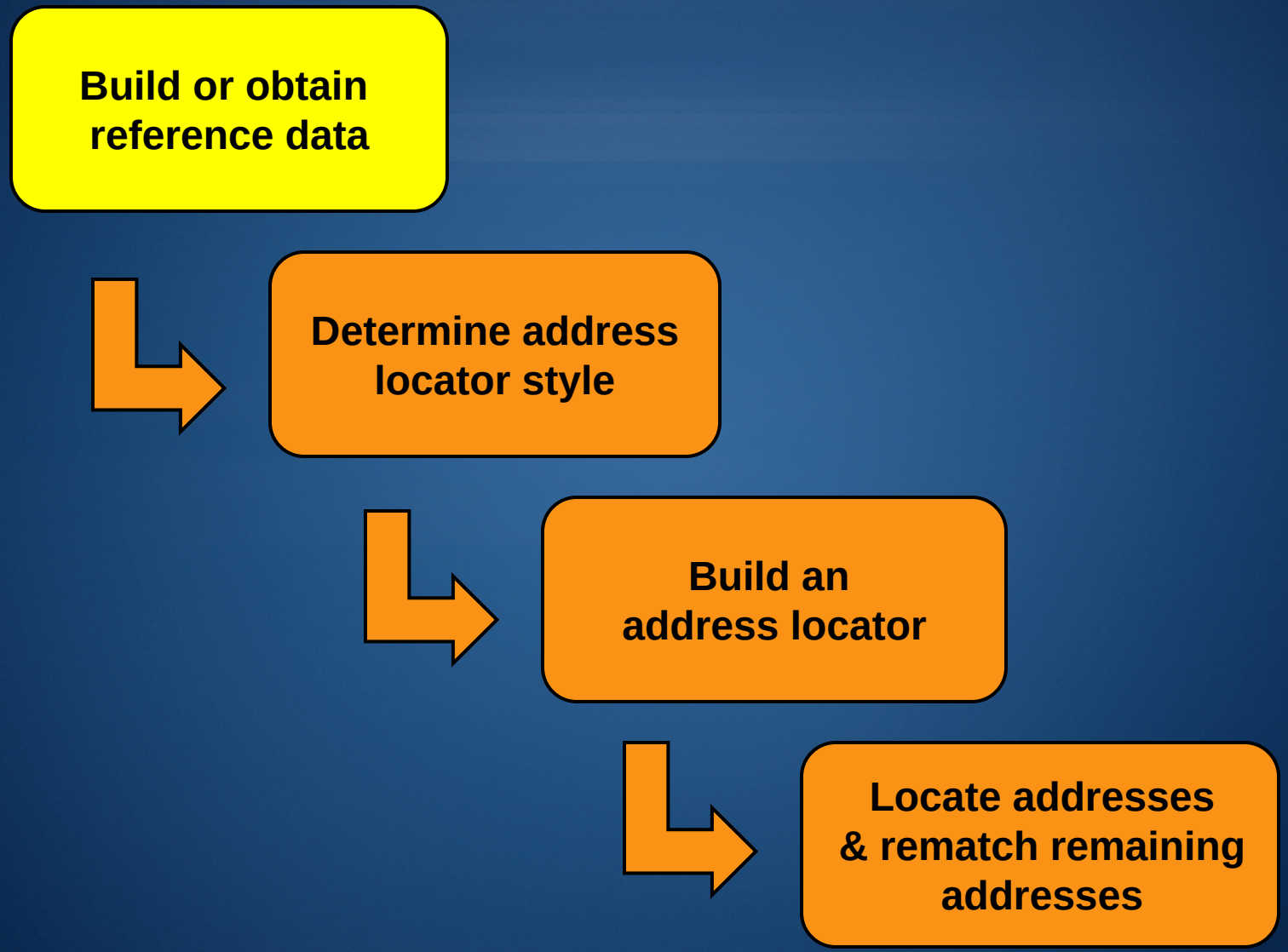
Geocoding Components



Geocoding Work Flow



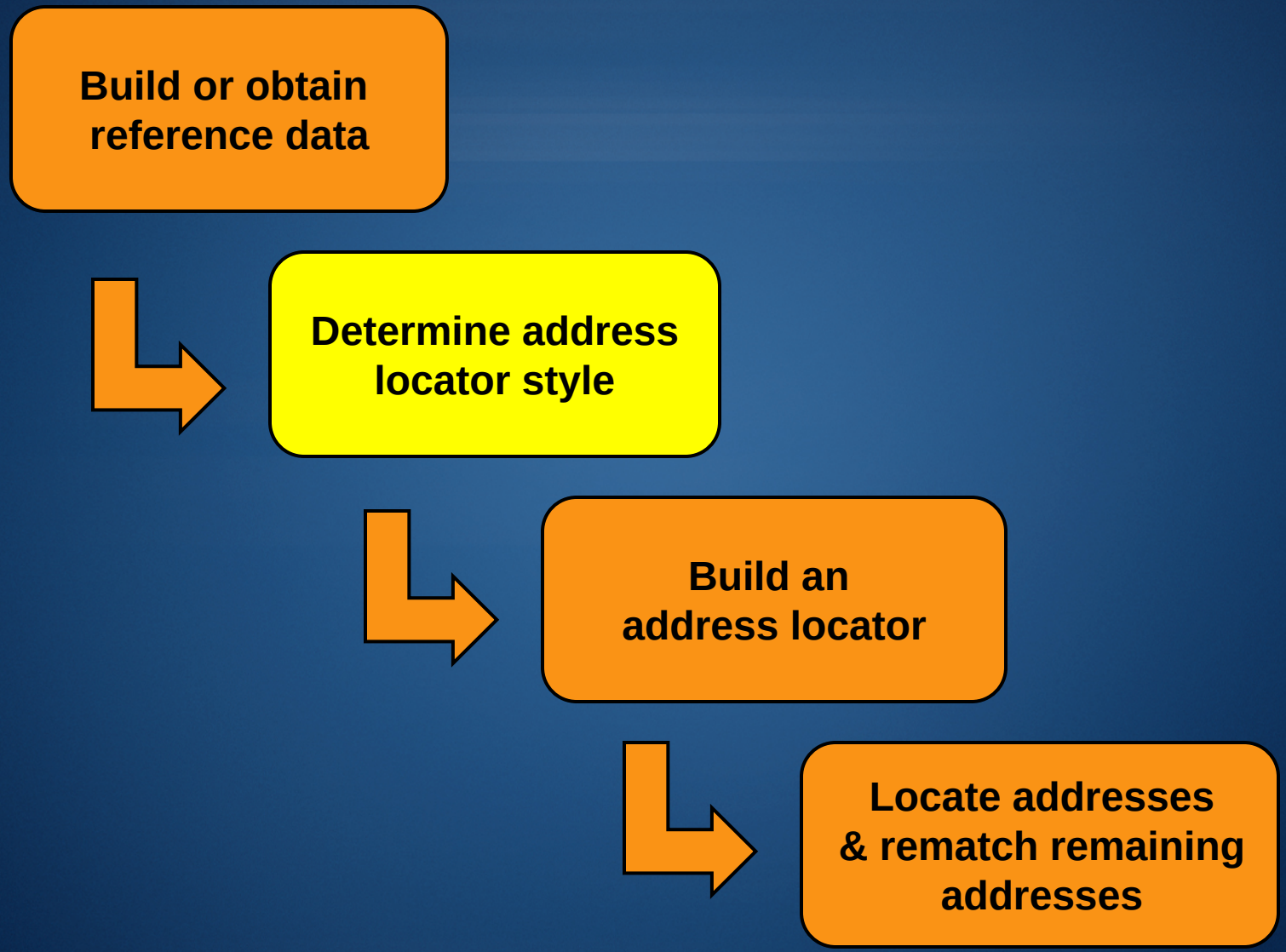
Geocoding Work Flow



Obtain Reference Data

- Reference data must contain desired level of detail
  - Geographic Extent
    - data needs to cover the same area that you want to geocode
  - Resolution
    - Street Names
    - House Number Ranges
    - Address attributes of specific parcels
- Many sources
  - StreetMap data part of ArcGIS core
  - TIGER or local government data
  - Data Vendors

Geocoding Work Flow



What is an Address Locator Style

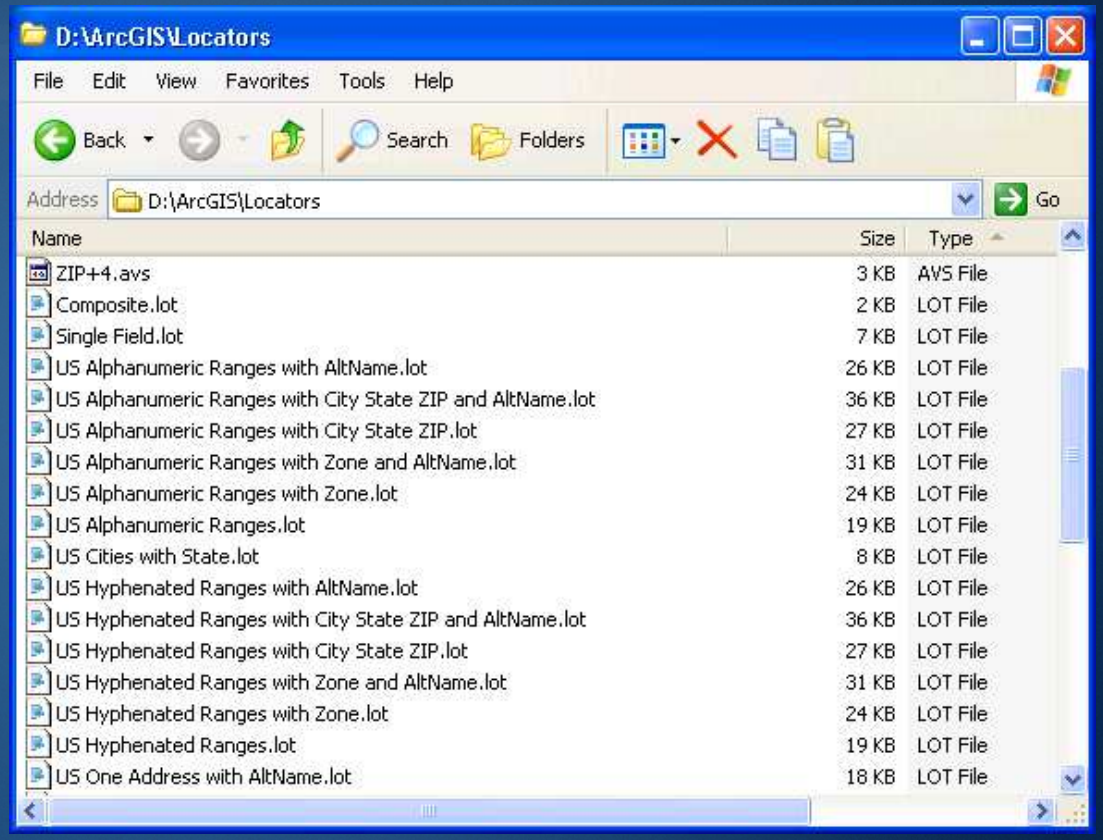
- Template containing geocoding properties
- Choose style based on properties of:
  - Address data: attribute values
  - Reference data: Geometry and attribute values

Some of the basic characteristics of each of the address locator styles provided with ArcGIS

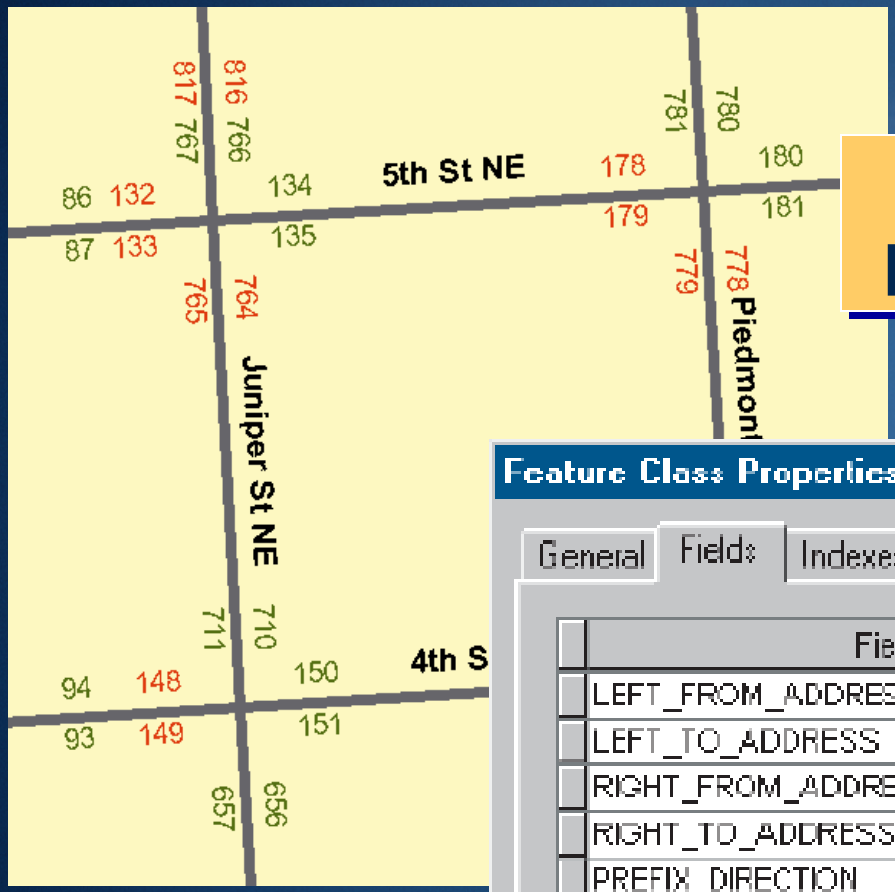
Styles	Typical reference dataset geometry	Typical reference dataset representation	Address search parameters	Examples	Applications
US Streets	Lines	Address range for both sides of street segment	All address elements in a single field	320 Madison St.	Finding a house on a specific side of the street
US Alphanumeric	Lines	Address with grid zone information	All address elements in a single field	N2W1700 County Rd.	Used in some regions of Illinois and Wisconsin
US Hyphenated	Lines	Cross street information in address	All address elements in a single field	105-30 Union St.	Used in locations such as Queens, New York
US One Range	Lines	One range for each street segment	All address elements in a single field	2 Summit Rd.	Finding a house on a street where side is not needed
US One Address	Points or polygons	Each feature represents an address	All address elements in a single field	71 Cherry Ln.	Finding parcels, buildings, or address points
Single Field	Points or polygons	Each feature represents a	Single, user-specified variable	Cabrillo College	Finding place names or

More About Address Locator Styles

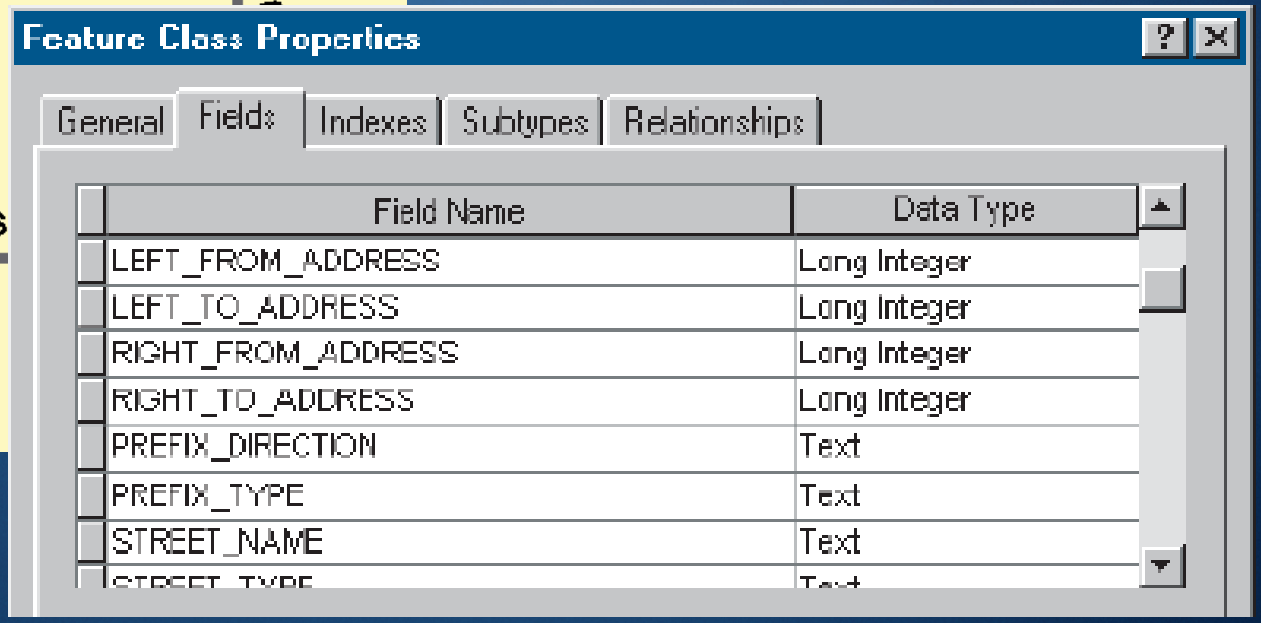
- Works with feature classes and tables in workspaces including
  - FileGDB, Personal GDB, SDE GDB, Personal SQLExpress Databases
  - Shapefiles
  - Coverages
  - SDC compressed data
- ArcGIS locator styles
  - .lot file extension



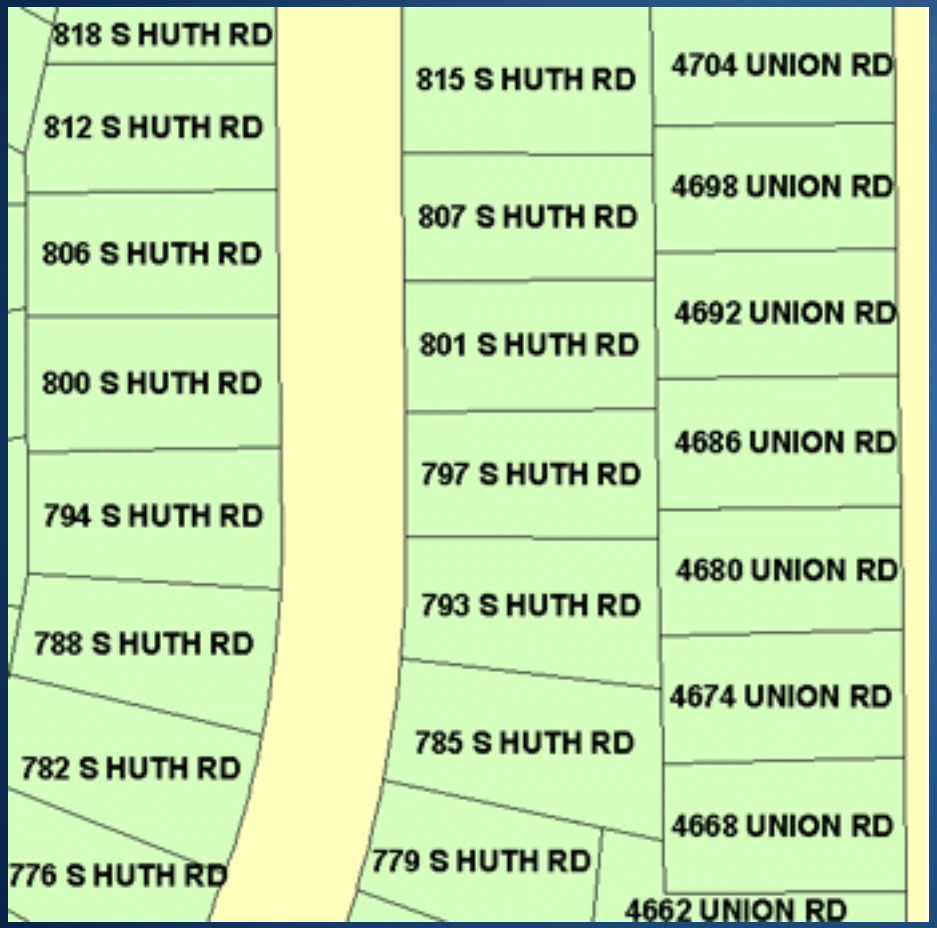
Locator Style Example



US Streets
Reference Data = Lines

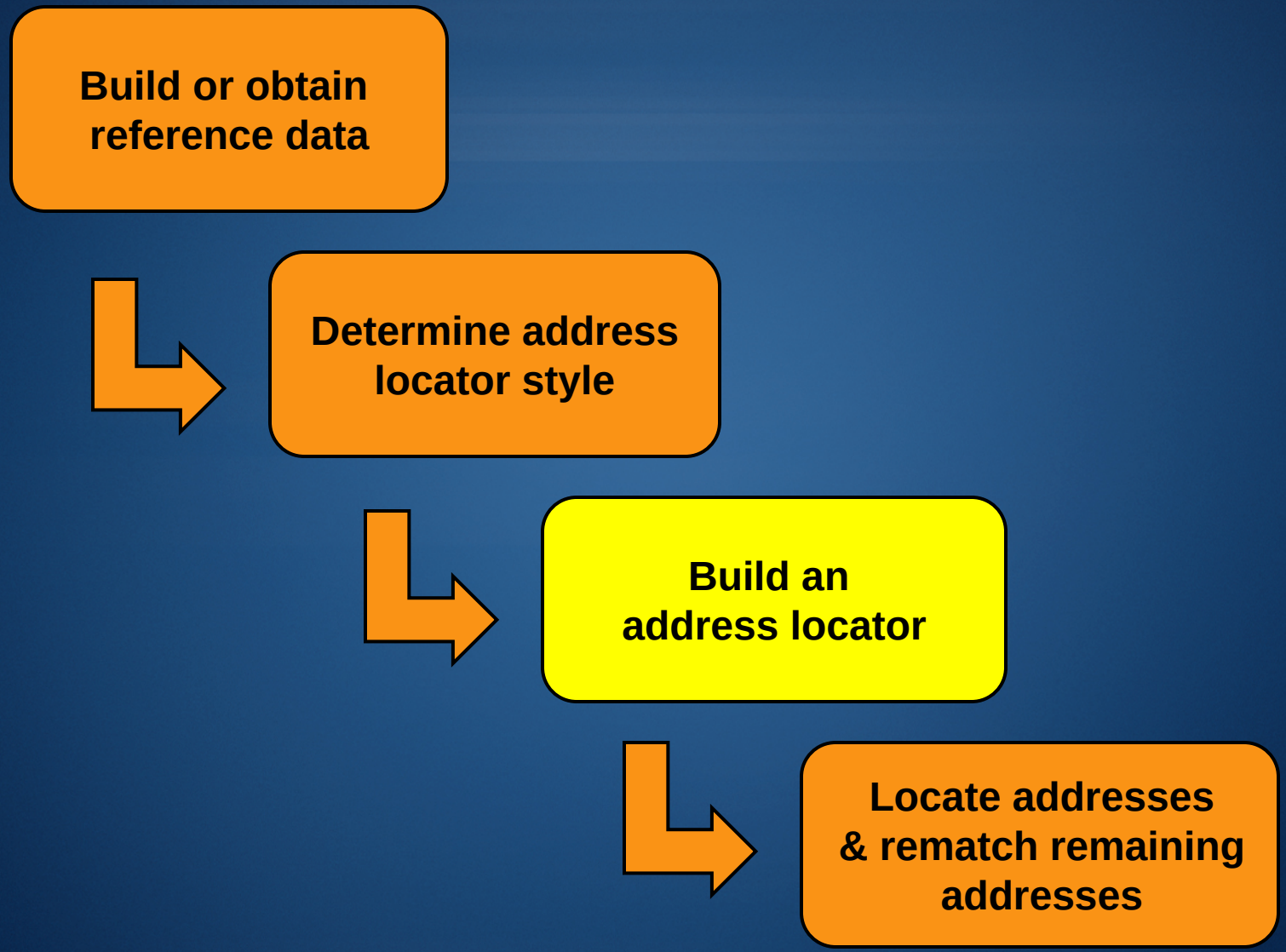


Locator Style Example



US One Address
Reference Data =
Points or Polygons

Geocoding Work Flow

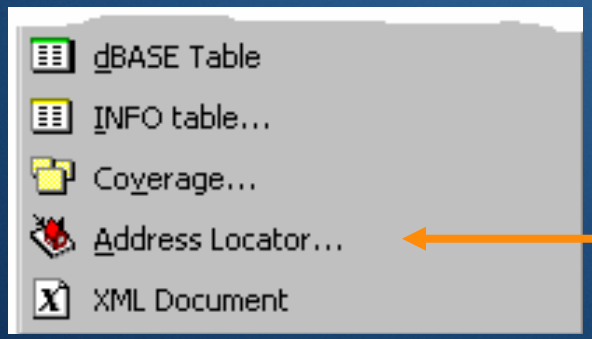


Address Locators in ArcGIS 9.2

- A dataset that stores address attributes, indexes, and rules; used for geocoding
  - translates nonspatial descriptions of places, such as street addresses, into spatial data that can be displayed as features on a map
- Self-contained and physically independent of their reference data
- Represent a snapshot of the reference data at a point in time
- Can be stored in a File folder or in a Geodatabase
- Don’t need to pre-standardize reference data

Creating an Address Locator

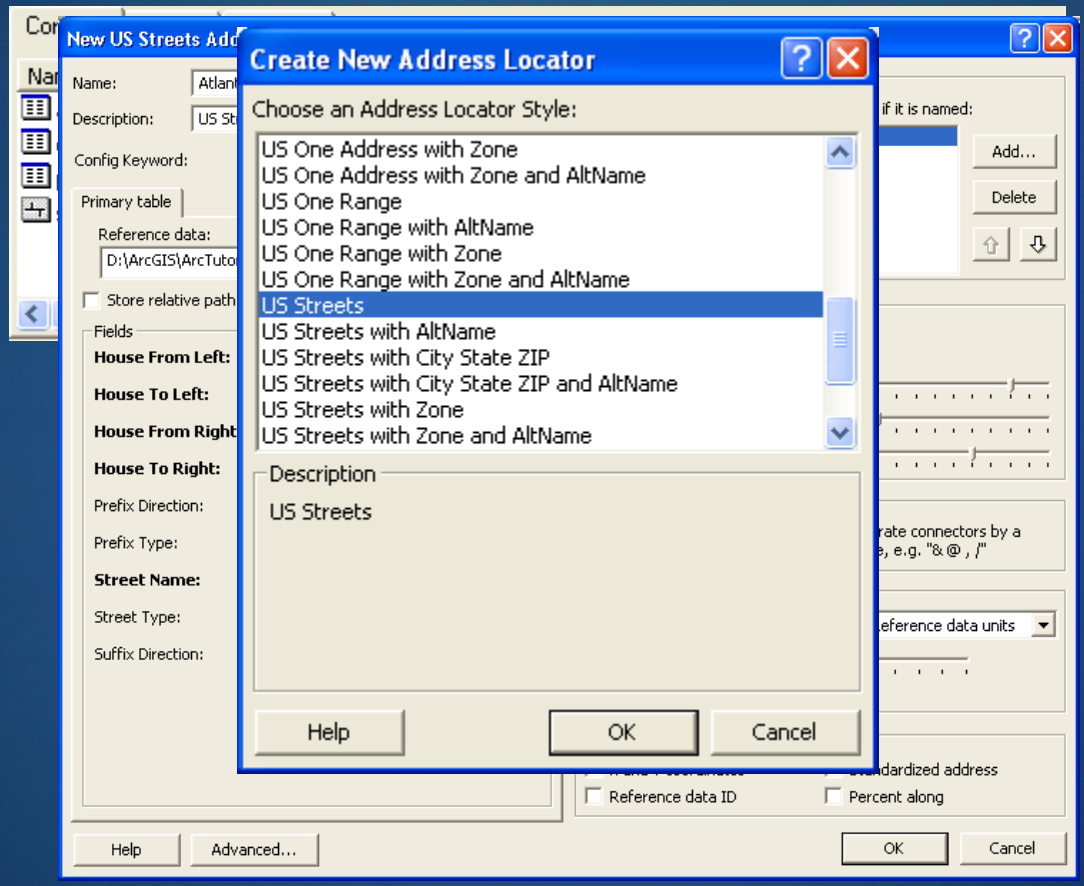
- Defines a process for converting nonspatial descriptions of places to spatial locations
- Create address locators directly in a file folder workspace or inside a geodatabase
- In ArcCatalog, right-click on a folder or a geodatabase, and select the New > Address Locator command
  - Creates a .loc file



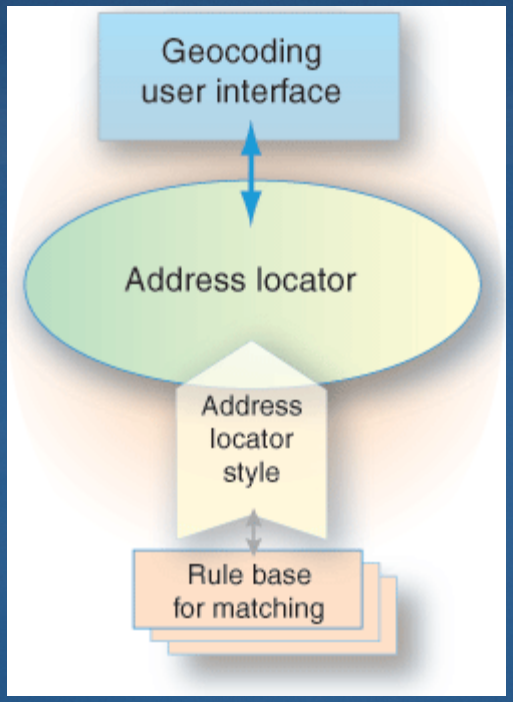
Create address locator command

Creating an address locator

- Select an address locator style



Understanding address locators – a summary

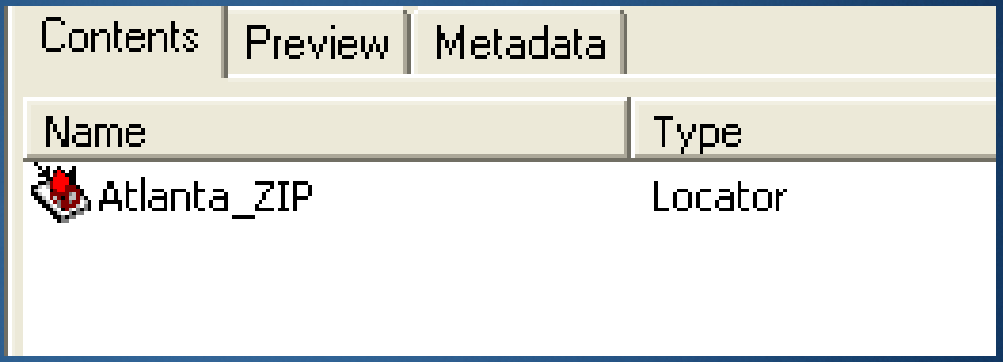


The address locator style, as a skeleton for the address locator, directs the paths and functions for the entire geocoding process

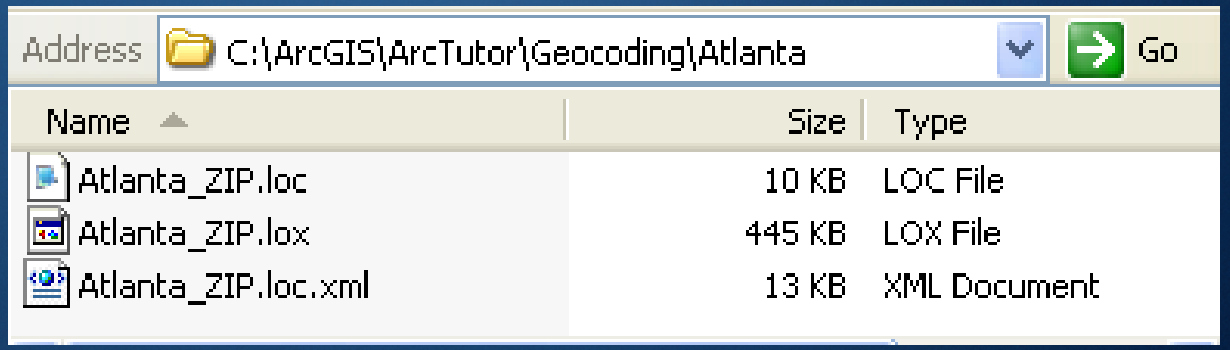
Address Locators in a File Folder

- Two files :
  - <locator_name>.loc (locator properties)
  - <locator_name>.lox (attributes, indexes)

ArcCatalog



Windows Explorer

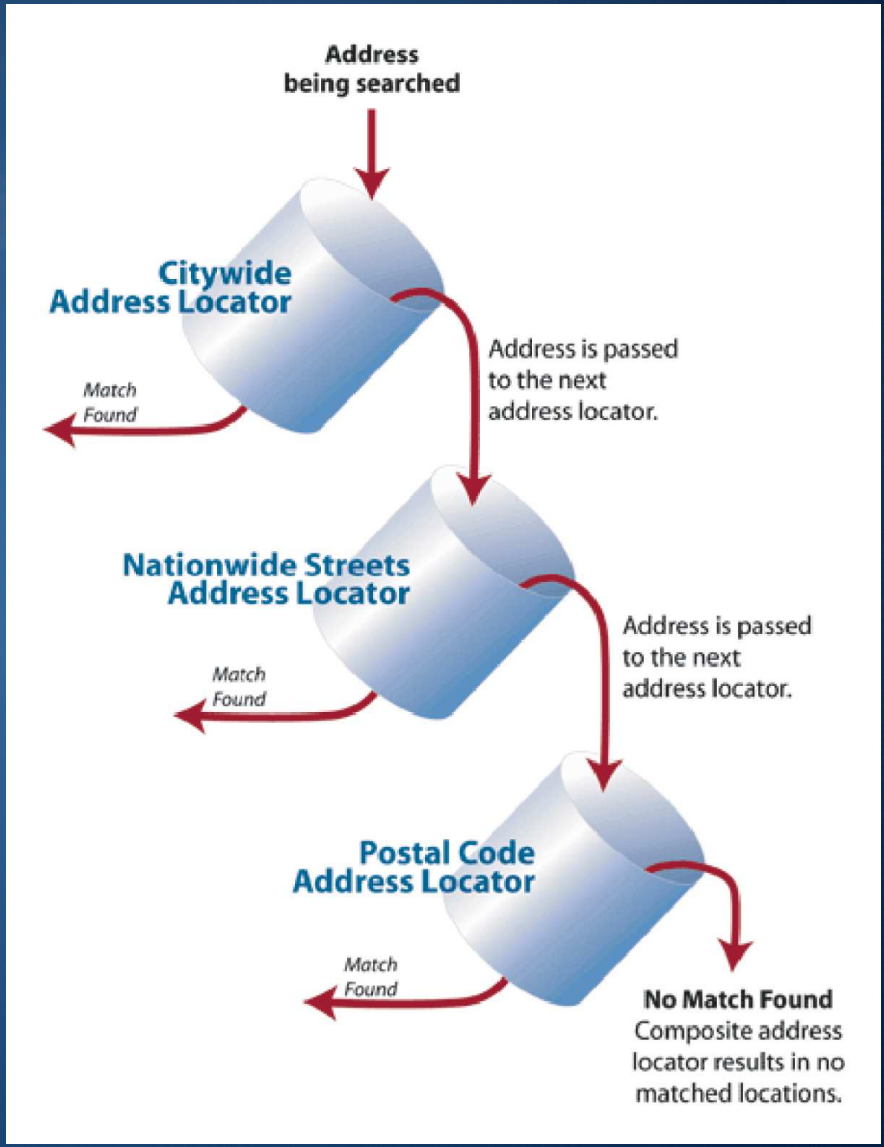


Address Locators Inside a Geodatabase

- Address locators are stored as tables inside a File, Personal, or ArcSDE geodatabase
- Users should always manage address locators using ArcCatalog
- Address locators can be copied and pasted between different workspaces

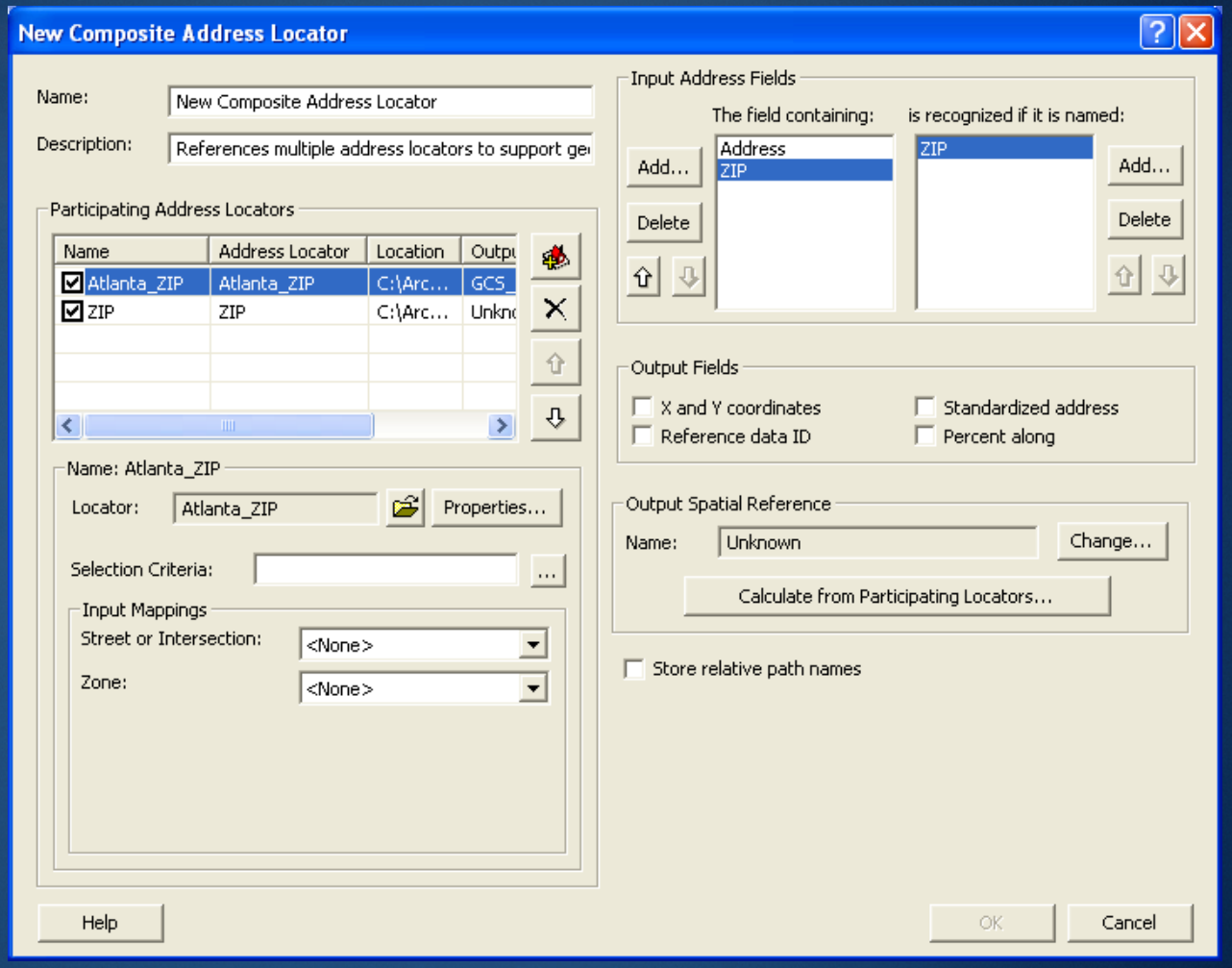
Composite Locator

- Combining multiple locators
  - Cascade/Fallback geocoding
  - Geocode against multiple datasets
  - Spatially disjoint datasets
  - Composite address locators work in ArcGIS desktop only

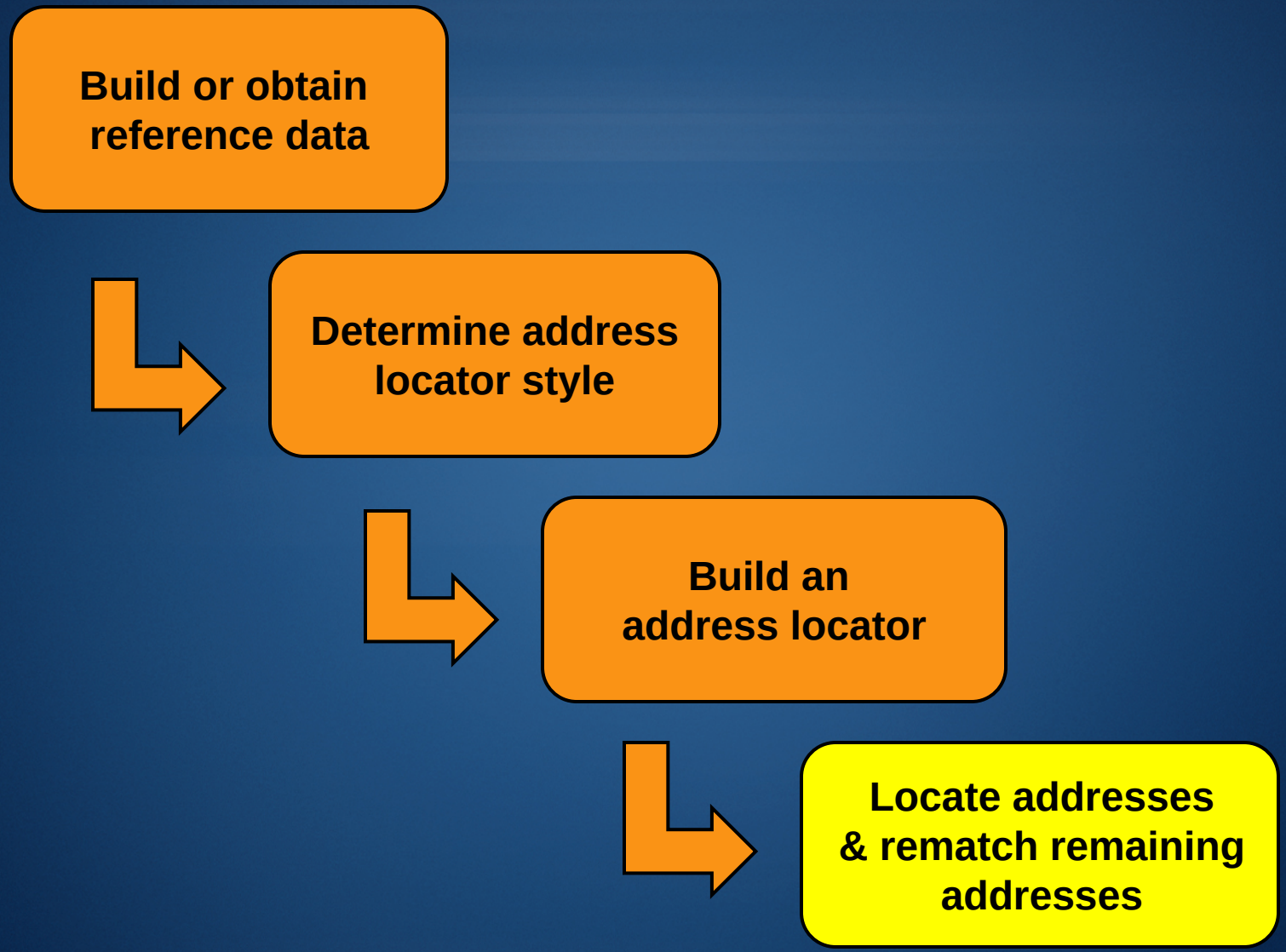


Composite Locator

Specify Locators

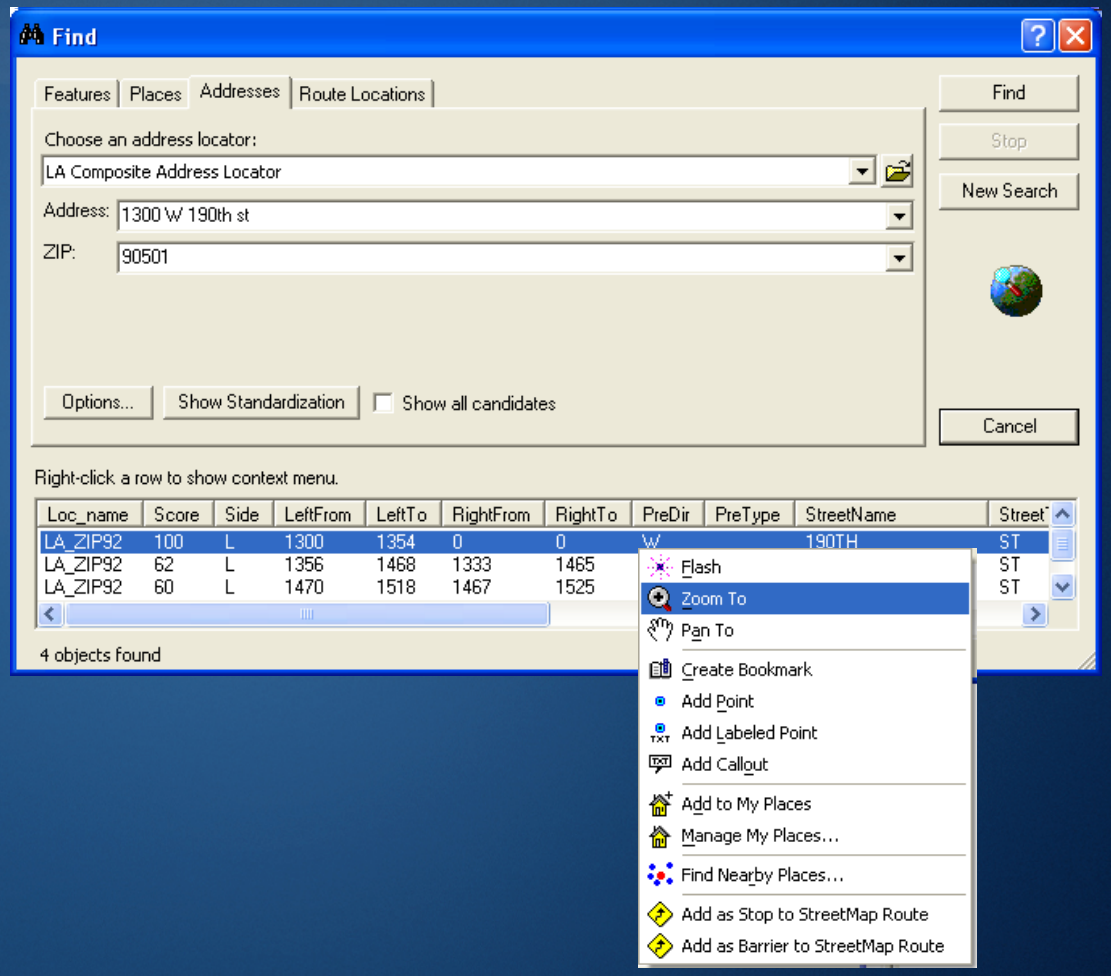


Geocoding Work Flow



Finding an Address

- Finds addresses
  - Specify address locator
  - Specify address
  - Show all candidates
    - Minimum Candidate Score considered

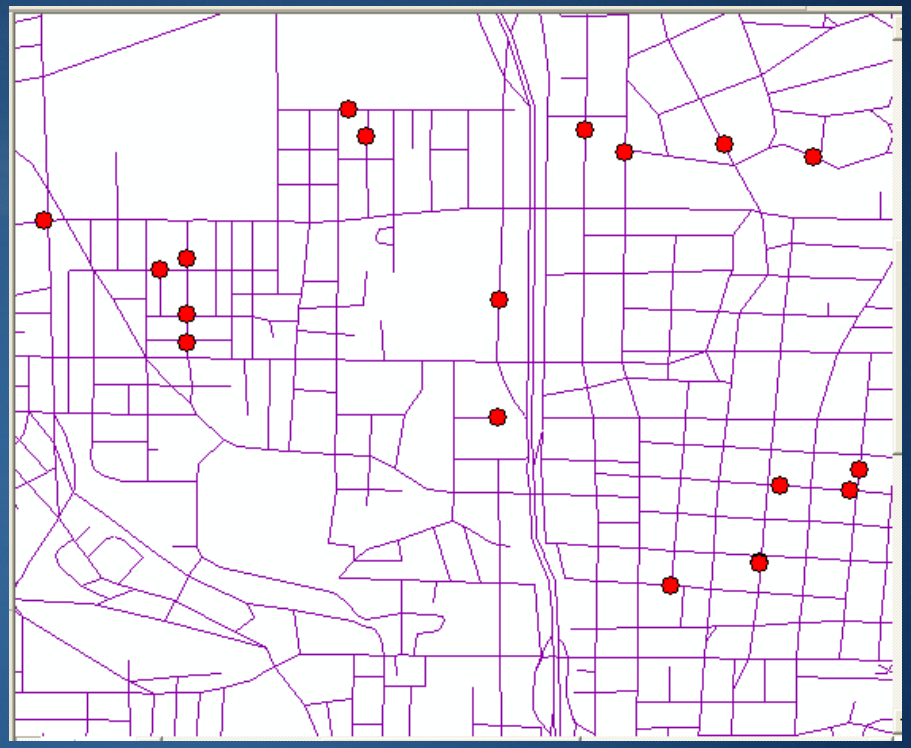


Geocoding in ArcMap

1. Create an Address Locator in ArcCatalog
2. Add Address Locator to ArcMap
3. Specify address table
4. Specify output type and location
5. Change geocoding options if needed
6. Geocode addresses
7. Review/Rematch

New Fields in Output Feature Class

- Status
  - U: Unmatched
  - T: Tied
  - M: Matched
- Score
- Side
- Match_addr
- Arc_Street / Arc_Zone



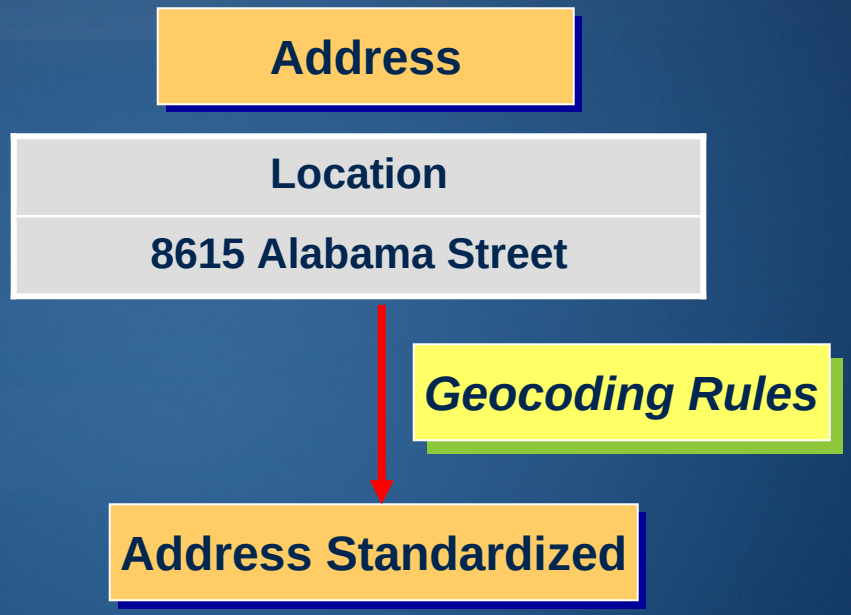
FID	Shape	Statu	Score	Side	Match_addr	ARC_Street	ARC_Zone
36	Point	M	100	R	599 EZZARD ST SE, 30312	599 EZZARD ST SE	30312
37	Point	T	100		CYPRESS ST NE & 3RD ST NE, 30308	CYPRESS ST NE & 3RD ST NE	30308
38	Point	U	0			1280 MECASLIN ST NW	30318
39	Point	M	100	L	192 LITTLE JOHN TRL NE, 30309	192 LITTLE JOHN TRL NE	30309

Why Won't Some Addresses Match

- Reference data not current
- Reference data not standardized
- Errors in address (Incorrect Zone or Range, Street name misspelled)
- Address doesn't match in any range
- Missing address ranges
- Trying to match invalid info, such as PO Box or Apt #

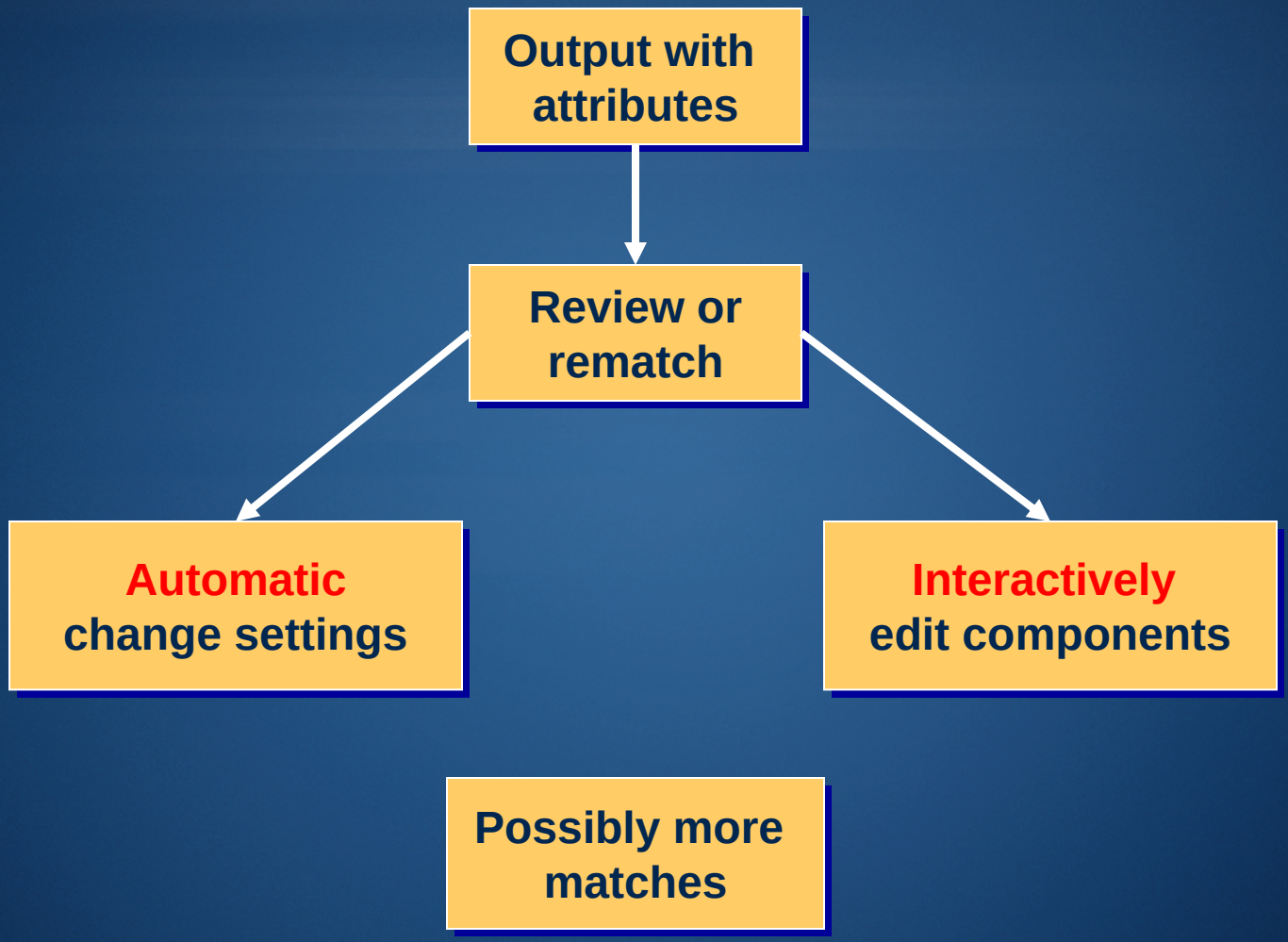
Address Standardization

- Address parsing
  - Address table
  - Reference data
  - Increases matches
- Standardize on the fly

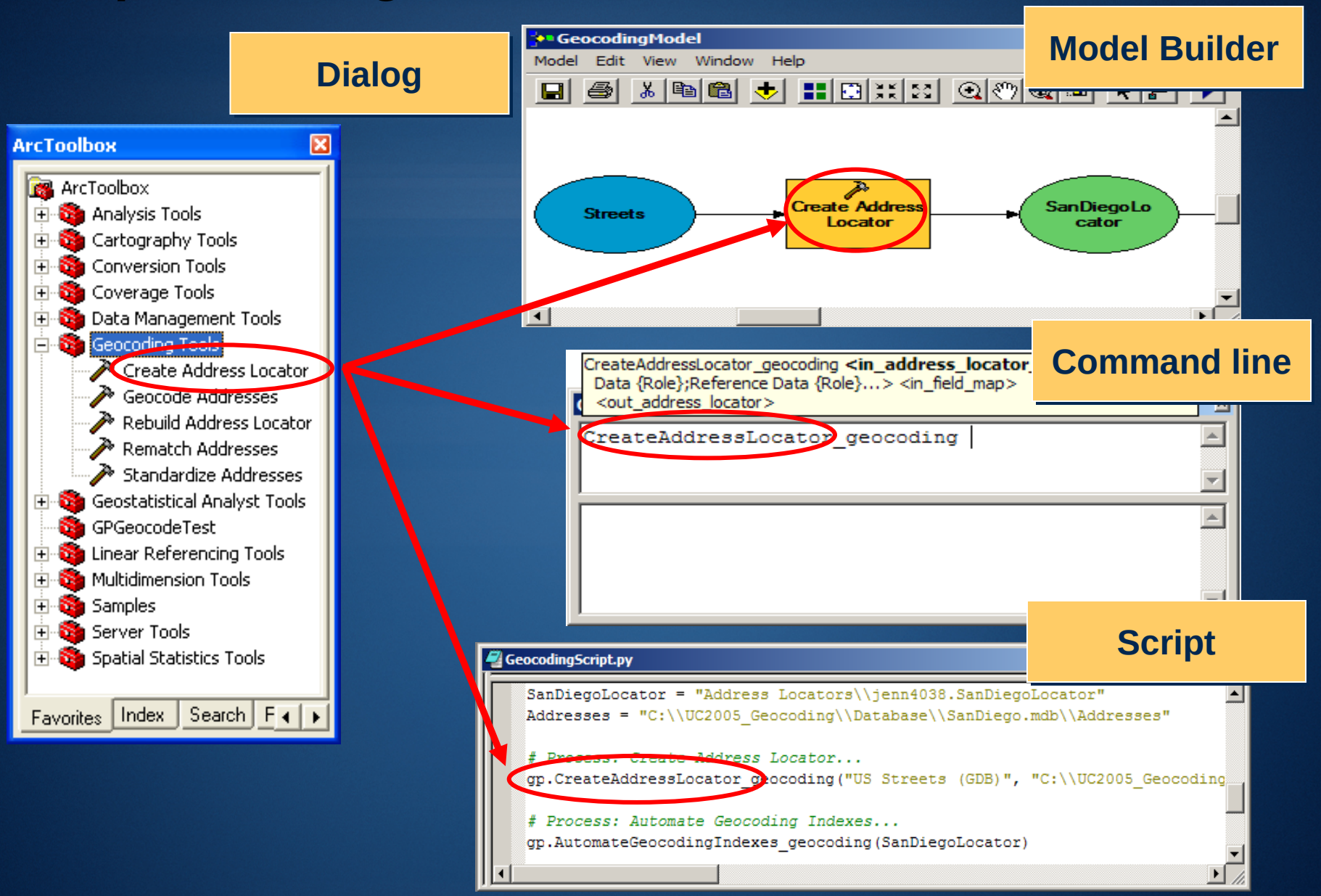


HouseNum	PreDir	PreType	StreetName	SufType	SufDir
8615			Alabama	St	

Review/Rematch

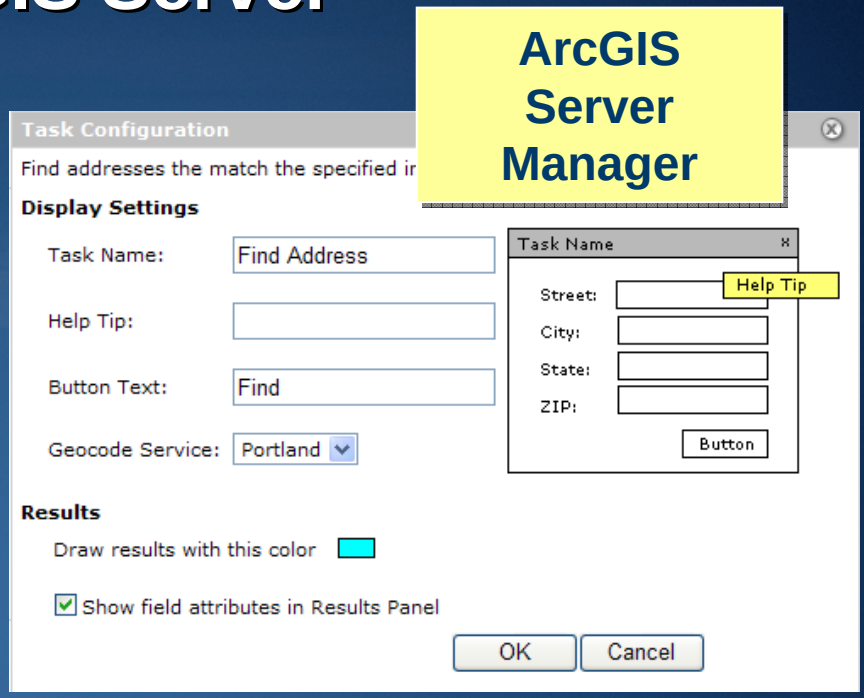


Geoprocessing



Find address task in ArcGIS Server

- Requires published Geocode Locator
- User input form created dynamically at run time
- Match single or batch addresses



Summary – Geocoding in ArcGIS 9.2

- Improved performance for creating locators and matching addresses
- Managing and sharing locators are easier
  - Self-contained, independent of reference data
- Can create locators with very large datasets (> nationwide)
  - Support nationwide geocoding using multiple zone fields including city, state, and ZIP
- New advanced locator properties
  - Making locators more self-contained
    - Store standardized reference data in locator
    - Embed geocoding rules in locator
- Geprocessing tools for managing and rebuilding locators

Thank You